LIBRARY
FISH & WILDLIFE SERVICE
PACIFIC OCEANIC FISHERY
INVESTIGATIONS

PROCEEDINGS OF THE UNITED STATES NATIONAL MUSEUM

issued by the

SMITHSONIAN INSTITUTION
U. S. NATIONAL MUSEUM

Vol. 96 Washington: 1944 No. 3187

A REVISION OF THE AMERICAN CLINGFISHES, FAMILY GOBIESOCIDAE, WITH DESCRIPTIONS OF NEW GENERA AND FORMS

By Leonard P. Schultz

Recently, while attempting to identify some specimens of clingfishes from the fresh waters of Venezuela and Colombia, South America, it became clear to me that the American Gobiesocidae were in a state of confusion greater than I had suspected from previous work on the group. A search of the literature did not reveal any attempt to straighten out the classification or nomenclature of this family. New species have been described with regularity, but in many cases the describers have ignored the same species long ago named from nearly the same localities. I have made no attempt in this revision to record all the miscellaneous references to American Gobiesocidae, but I have included the most important contributions. To record every reference in the literature would require one to examine the specimens in most of the important museums of the world, which is not possible at the present time. However, that will eventually have to be done if the identifications recorded in numerous instances are to be corrected.

It was found necessary to dissect the skin away from the front of all median fins in order to count all the fin rays. Very few authors have counted the first one or two rays at the beginning of both anal and dorsal fins. The short stubby ray on the dorsal edge of the pectoral fin also is included in my counts. (See table 1.)

The coloration is variable and cannot be used to separate species except to a limited extent.

604148—44——1

In this study of the American Gobiesocidae, 9 genera and 25 species and subspecies are recognized. By far the greatest majority of these occur in the tropical Pacific. Although the Gobiesocidae are mostly marine fishes, a few species have been taken in fresh-water streams a short distance above brackish water, clinging to the stones.

Rimicola of the Pacific is represented in the Atlantic by the genus *Acyrtus*, but the genus *Infratridens* has no known Atlantic counterpart. *Arbaciosa* has five forms in the Pacific and but one in the Atlantic. *Sicyases* occurs in the Pacific only at the southern part of South America. *Cotylis* has four species in the Pacific and one in the Atlantic. *Sicyogaster* has an interrupted distribution, with one species along the Pacific coast of southern South America and another along the west coast of the United States and British Columbia. *Arcos* has one species on each side of Central America. *Gobiesox* has two species in the Atlantic, and three in the Pacific confined to tropical waters.

Cocos Island presents a problem that needs further study. So far, the Pacific representatives of *Gobiesox cephalus*, and *Cotylis nigripinnis* from the Atlantic, have been taken only on Cocos Island. They are *Gobiesox fulvus* and *Cotylis nigripinnis woodsi*.

The records of *Gobiesox adustus* (Pellegrin, Bull. Mus. Paris, vol. 7, p. 206, 1901, and Günther, Biologia Centrali-Americana, Pisces, p. 4, 1906) in the Río Chapalagana at Tépico in the Río Grande de Santiago may be some other species. No description is given, and thus it is not possible to place the above record with any species until the specimens have been re-examined.

While this study was being made, Dr. S. F. Hildebrand kindly turned over to me some notes made by Dr. W. H. Longley on types in certain museums of Europe. Though most difficult to read, these proved of considerable value, and it was a pleasure to note that I came to the same conclusions that the late Dr. Longley had independently arrived at in regard to referring certain species to the synonymy of others. Although his notes were never published, some of the conclusions appeared during 1933 and 1934.

The following key was prepared after examining the American clingfishes in the collections of the United States National Museum, as well as specimens lent by the Chicago Natural History Museum (F. M. N. H.) through the courtesy of Dr. K. P. Schmidt and Mrs. Marion Grey, and others lent by the University of Michigan Museum of Zoology through the courtesy of Dr. Carl L. Hubbs. Dr. C. M. Breder, Jr., of the American Museum of Natural History, kindly allowed me to examine the holotype of *Gobiesox yuma* Nichols.

KEY TO THE GENERA AND SPECIES OF AMERICAN GOBIESOCIDAE

1*a*. Groove between tip of snout and upper lip of premaxillaries extending around front of snout and not forming a convex curve dorsally over tip of snout; width of middle of upper lip narrow, about the same as laterally, and approximately equal to width of pupil; gill membranes attached opposite third to fifth upper pectoral fin rays; axial flap of skin behind pectoral fin with its upper edge attached at midbase of pectoral fin or below midbase; fleshy pad on outer pectoral base present only ventrally, without a free margin posteriorly and enlarged or swollen at lower posterior corner of pectoral fin base; lower first to fifth pectoral rays short, about half length of longest pectoral ray, eighth and ninth much longer than lower pectoral rays; anal rays 6 to 8; dorsal rays 6 or 7 (all rudiments counted as one ray).

2*a*. Incisorlike teeth at front of lower jaw with 4 minute points,[1] these at front of upper jaw mostly conical; each jaw with 1 or 2 inner rows of minute conical teeth; axial flap of skin behind pectoral fin attached at lower part of pectoral fin base; anal origin a little behind a vertical line through dorsal origin; greatest depth of body 5½ to 6½, length of head 3 to 3¼, greatest width of head 4½ to 5, length of disk 5 to 5½, all in standard length; length of disk about equal to distance from tip of snout to front of disk; pectoral rays about 19 to 21; color when alive green or reddish, with or without light spots (*Acyrtus*, new genus) (Florida Keys and West Indies)_____**Acyrtus rubiginosus (Poey)**

2*b*. Incisorlike teeth at front of lower jaw with smooth tips; middle front teeth of upper jaw conical; teeth in inner rows of both jaws shorter, smaller, and conical; axial flap of skin behind pectoral fin attached opposite middle of pectoral base; greatest depth of body 8 or 9, length of head 3½ to 3⅘, greatest width of head 5, length of disk 5½, all in standard length; anal origin a little in advance of dorsal origin; interorbital space 3½ in head, eye 1½ in interorbital space; length of disk about equal to caudal peduncle; lower pectoral rays shorter, second and third from bottom about half length of longest pectoral fin rays; pectoral fin rays about 16 or 17 (*Rimicola* Jordan and Evermann) (Todos Santos Bay, Baja California to Monterey Bay and west coast of Vancouver Island, British Columbia)_____ **Rimicola eigenmanni (Gilbert)**

1*b*. Tip of snout formed by premaxillaries, which are much wider at middle of snout than laterally, groove arched dorsally over tip of snout; axial flap of skin behind pectoral fin with its upper edge attached much above midbase of this fin; lower first to seventh pectoral fin rays not shortened, about as long as eighth or ninth from bottom.

3*a*. Anterior teeth of lower jaw trifid incisors, trifid tips usually evident, except middle 2 or 3 sometimes worn off smooth although 1 or 2 of more laterally placed incisors at front of lower jaw always trifid.

4*a*. Gill membrane attached opposite third to fifth pectoral fin rays; front teeth of upper jaw smooth tipped incisors (sometimes flattened-coniform); front of both jaws with 1 or 2 inner rows of small conical teeth behind outer row of enlarged incisorlike teeth, sometimes these inner rows apparently represented by only 2 or 3 teeth; fleshy pad on outer base of pectoral fin with free posterior margin ending a little below attachment of gill membranes; greatest width of head 3, length of head

[1] Sometimes the middle two teeth are worn down nearly smooth, as in the type of *G. beryllinus* Hildebrand and Ginsburg.

2¾ to 2⅘, greatest depth of body 5 to 6, length of disk 3½, all in standard length; length of disk much greater than distance from tip of snout to front of disk; distance from dorsal origin to midbase of caudal fin contained 1¾ to 1⅘ times in snout tip to dorsal origin; anal origin under base of the third or fourth dorsal fin ray; caudal peduncle short, its depth about equal to its length and about 3 times in base of dorsal fin; dorsal fin rays 11 to 13, anal 10 or 11, pectoral 18 to 21 (usually 19 or 20) (*Infratridens*, new genus) (Gulf of California; southern California)_____ **Infratridens rhessodon** (Rosa Smith)

4*b*. Gill membranes joined opposite upper edge of pectoral fin base; incisorlike teeth of both jaws with trifid tips, except middle pair or two sometimes smooth-tipped; teeth in both jaws in a single row, lateral 2 to 4 conical and last 1 or 2 sometimes strong canines; outer lower base of pectoral fin with fleshy pad poorly developed and without any trace of a free margin; pelvic fins joined about halfway out fourth to sixth pectoral fin rays and not near base; dermal flap in axile of pectoral fin joins opposite fourth to tenth pectoral fin ray; width of head 3½ to 6, length of head 2⅔ to 5, greatest depth of body 6 to 10 (except in *eos*), length of disk 4 to 6 (except in *eos*), all in standard length; opercular spine not strongly developed and not reaching to rear of head (*Arbaciosa* Jordan and Evermann).

5*a*. A pair of black spots (more or less ocellate) on back behind head over pectorals usually distinct, each spot well separated; dorsal surface of back in front of dorsal origin variously barred or mottled or dark spotted but without 3 hourglass-shaped large dark blotches. (Species inhabiting waters of the Pacific coast and offshore islands.)

6*a*. Distance from base of last dorsal ray to midcaudal fin base contained 1³⁄₁₀ to 1¾ times in length of dorsal fin base; least depth of caudal peduncle about 1.0 to 1⅓ times in length of caudal peduncle (from base of last anal ray to midcaudal fin base); interorbital space longer than length of snout; dermal flap of skin in axis of pectoral fin with its upper edge joined to pectoral fin base opposite fifth to eleventh pectoral ray; dorsal rays 10 or 11 (usually 10), anal rays 7 to 9 (usually 8 or 9); pectoral fin rays 19 or 20; middle teeth of both jaws with trifid tips, middle denticle usually longest on lateral teeth, worn down in adults (Gulf of California)_____**Arbaciosa humeralis** (Gilbert)

6*b*. Distance from base of last dorsal ray to midcaudal fin base contained 0.75 to 0.9 in length of dorsal fin base; least depth of caudal peduncle 1.6 to 2 times in length of caudal peduncle.

7*a*. Pectoral fin rays 22 to 24 (usually 23); dorsal rays usually 8 (7 to 9), anal 7 or 8 (usually 8); greatest width of head contained 3½, length of head 2⅔ to 2⅘, in standard length; snout a little longer than width of interorbital space; middle teeth of both jaws with trifid tips (Mazatlán, Mexico).

Arbaciosa eos (Jordan and Gilbert)

7*b*. Pectoral fin rays usually 19 to 21 (rarely 22).

8*a*. Middle incisorlike teeth of both jaws (at least on adults) with smooth tips, the lateral incisors trifid; pectoral fin rays usually about 21; bony ridges on snout weakly developed.

9*a*. Dorsal rays 8 to 10 (usually 9); anal 8 or 9 (usually 8) (Peru)_____ **Arbaciosa pyrrhocincla pyrrhocincla** (Cope)

9*b*. Dorsal rays 8; anal 7 or 8 (Galápagos Islands).

Arbaciosa pyrrhocincla truncata Heller and Snodgrass

8*b*. Middle incisorlike teeth of both jaws usually trifid, seldom worn off smooth even on adults; dorsal rays 6 to 8; anal 6 or 7; pectoral 19 to 21 (usually 19 or 20); bony ridges on upper part of snout rather well developed (Ecuador to Gulf of California)..... **Arbaciosa rhodospila** (Günther)

5*b*. Three or four large hourglass-shaped dark brown or blackish blotches from in front of dorsal fin to rear of head; a fainter one sometimes on top of head; side of head with four oblique bars and sides of body with dark bars; incisors with trifid tips; dorsal rays 7 to 9; anal 6 to 9 (rarely 6 or 9); pectoral 18 to 23 (West Indies; Guatemala to Brazil)..... **Arbaciosa fasciata** (Peters)

3*b*. None of the teeth with trifid tips.

10*a*. Middle pair of incisors on both jaws much broader and longer than adjoining pairs; posterolateral teeth small and conical; rims of orbits bony, elevated; opercular spine strongly developed and forming posteriormost tip of head; valvular flap and margin of anterior nostril with its margin finely fringed with short cirri; gill membrane attached at upper anterior edge of pectoral fin base; fleshy pad well developed on outer lower surface of pectoral base, with a free membranous edge posteriorly ending at base of tenth to twelfth pectoral ray; shoulder girdle with a free dermal flap extending dorsally nearly to attachment of gill membrane; anal origin under base of second or third from last dorsal fin ray; disk large, its length about equal to head and contained about 2⅔ to 2⅘ in standard length; anus just behind rear margin of disk; origin of dorsal fin a trifle closer to tip of opercular spine than midcaudal fin base; dorsal rays 10 or 11 (usually 11); anal 8 or 9; pectoral 24 or 25 (*Sicyases* Müller and Troschel).

11*a*. Dorsal origin equidistant between midcaudal fin base and upper edge of gill opening to middle of length of upper pectoral rays; distance from base of last dorsal ray to midcaudal fin base in upper edge of gill opening to dorsal origin 1.80 to 2.35; length of caudal peduncle in snout tip to anal origin 5.50 to 7.36; base of dorsal fin in head 1.90 to 2.40; base of anal fin in head 2.83 to 4.06; base of dorsal fin in snout tip to dorsal origin 3.70 to 4.67; base of anal fin in snout tip to anal origin 6.70 to 8.83 (Chile and Peru).

Sicyases sanguineus Müller and Troschel

11*b*. Dorsal origin equidistant between midcaudal fin base and middle of postorbital length of head; base of last dorsal ray to midcaudal fin base in upper edge of gill opening to dorsal origin 1.65; length of caudal peduncle in snout tip to anal origin 5.26; base of dorsal fin in head 1.55; base of anal fin in head 2.14; base of dorsal fin in snout tip to dorsal origin 3.04; base of anal fin in snout tip to anal origin 5.10 (Juan Fernández Island).

Sicyases hildebrandi, new species

10*b*. Middle pair of incisors not enlarged, all the incisorlike or conical teeth at front of both jaws of nearly same size and length; front of lower jaw with small incisors in 2 or 3 pairs, with smooth tips; posterolateral teeth smaller, conical, sometimes one or two a little enlarged and almost caninelike; usually a small patch of very short conical teeth behind outer row of larger teeth at front of jaws but sometimes lacking or reduced to 1 or 2 teeth; rims of orbits not elevated or bony; anterior nostril with a dermal flap, sometimes with bifid or even

multifid tips arising on posterior rim, but nostrils not fringed with short cirri.

12*a*. Short blunt papillae on lips and around mouth generally, these in form of short barblets, arrangement as follows: Median part of chin and lower jaw with 2 or 3 rows of papillae, or chin anteriorly with a pair of low lobes in form of reversed parentheses [ )( ] and sometimes at their inner tips a pair of papillae (more or less fused with anterior lobes in *nigripinnis* and in *pinniger*); an inner row of barblets lateral to median lobes, one pair on each side; lower lip at each side of median part of chin lobelike, sometimes bearing 2 small papillae; along inner edge of groove of lower jaw are 2 or 3 large papillae or knobs on each side; upper lip with a median papilla or knob and 5 more on each side; front edge of snout above groove without papillae but laterally 3 to 5 knobs or papillae present or absent; sometimes another papilla occurring behind rictus and still another below rictus; gill membranes joined opposite fifth to seventh upper rays of pectoral fin; fleshy pad on outer base of pectoral fin with a free posterior membranous margin extending dorsally to opposite attachment of gill membranes; dorsal rays 10 to 19; pectoral fin rays 21 to 27; anus closer to anal origin than to rear margin of disk (*Cotylis* Müller and Troschel).

13*a*. Dorsal rays fewer than 15, counting all rudiments.

14*a*. Dorsal rays 13 or 14; anal 10; upper lip with papillae.

15*a*. Pectoral fin rays 22; papillae around mouth short and knoblike (Gulf of California)_____**Cotylis papillifer** (Gilbert)

15*b*. Pectoral fin rays 24 to 27; papillae around mouth more numerous, better developed, barbellike; lobe of lower lip next to middle of chin with two barbels (pl. 1, A) (Panama Bay to Ecuador and northern Peru)__**Cotylis microspilus** (Fowler)

14*b*. Dorsal rays 10 to 12; anal 8 to 10; papillae on upper lip, lobelike; lobe of lower lip next to middle of chin without barbels (pl. 1, B); dorsal origin equidistant between midbase of caudal fin and middle of postorbital length of head to equidistant between midcaudal base and upper base of pectoral fin; color pattern variable; median fins mottled, barred, or blackish with tips of rays white.

16*a*. Depth 4½ to 6½; eye 3.1 to 3.6 in length of base of dorsal fin; dorsal rays usually 11, anal usually 9, pectoral 22 to 26 (Maryland to West Indies to Brazil).

Cotylis nigripinnis nigripinnis Peters

16*b*. Depth about 6½ or 7; eye 2.8 in length of dorsal fin base; dorsal rays 10, anal 8, pectoral 22 (Cocos Island).

Cotylis nigripinnis woodsi, new subspecies

13*b*. Dorsal rays 17 to 19 (counting all rudiments); anal 10; anal origin under base of ninth or tenth dorsal fin ray or under middle of base of dorsal fin; origin of dorsal fin a little closer to tip of snout than midbase of caudal fin; papillae on upper lip knoblike (Gulf of California)_____ **Cotylis pinniger** (Gilbert)

12*b*. No papilla on upper lip, lobelike structures occurring around lips of lower jaw when best developed being low knobs or ridges, chin lacking inner series of papillae as described for *Cotylis*.

17*a*. Gill membranes joined at upper edge of pectoral fin base, sometimes a little anteriorly, giving appearance of being opposite

bases of upper first to third pectoral fin rays or the orbits larger than interorbital space; incisorlike teeth at front of lower jaw projecting forward in a nearly horizontal or oblique direction, middle pair a little larger than those laterally.

18*a*. Anal rays 10 to 14; dorsal 12 to 16, pectoral 19 to 23 (counting all rudiments); fleshy pad on outer margin of pectoral fin base very well developed and free membranous border along its posterior edge extending up to or beyond twelfth pectoral ray from dorsal edge; interorbital space equal to or wider than eye; least depth of caudal peduncle 4½ to 5¼ times in dorsal origin to midcaudal fin base; anal origin under anterior third of dorsal fin base (*Sicyogaster* Brisout de Barneville).

19*a*. Anal rays 10 or 11; dorsal 12 or 13; free margin of fleshy pad on pectoral fin base ending abruptly opposite ninth to twelfth ray from upper edge of pectoral fin base; eye 1 to 1⅓ in interorbital space and 4 or 5 in head; anus a little closer to rear margin of disk than to anus; origin of dorsal fin equidistant between midbase of caudal fin and anterior half of postorbital length of head (Peru and Chile).

Sicyogaster marmoratus (Jenyns)

19*b*. Anal rays 12 to 14; dorsal 13 to 16; fleshy pad on outer base of pectoral fin with free posterior margin ending gradually, about opposite first to third upper pectoral fin ray; eye 1⅓ to 2 in interorbital space; length of disk about 3, head about 2½, greatest depth 4½ to 5, all in standard length; anus much closer to anal origin than rear margin of disk; origin of dorsal equidistant between midbase of caudal fin and rear of head; interorbital space about equal to snout (San Diego to Queen Charlotte Islands, British Columbia; Puget Sound)_____ **Sicyogaster maeandricus** (Girard)

18*b*. Anal rays 7 or 8; dorsal 7 to 9; pectoral 22 to 25; diameter of eyes greater than interorbital space, the latter about ⅗ to ¾ in eye; color usually reddish when alive (*Arcos*, new genus).

20*a*. Free margin of fleshy pad on pectoral fin base ending opposite thirteenth ray from upper edge of pectoral fin base; interorbital space 6 or 7 in head; least depth of caudal peduncle 3½ times in distance from midcaudal fin base to dorsal origin and 1½ in its length; pelvics fastened nearer base of pectoral rays than one-third way out (Galápagos Islands; Panama Bay; and Mazatlán, Gulf of California).

Arcos poecilophthalmus (Jenyns)

20*b*. Free margin of fleshy pad on pectoral fin base ending opposite sixteenth to nineteenth ray from upper edge of pectoral fin base; interorbital 5 or 6 times in head; least depth of caudal peduncle 4 times in distance from midcaudal base to dorsal origin and 1⅔ in its length; pelvics fastened about one-third way out lower pectoral rays (Bahama Islands; West Indies).

Arcos macrophthalmus (Günther)

17*b*. Gill membranes joined opposite third to seventh upper pectoral fin rays somewhat more anteriorly than in *Cotylis;* incisorlike teeth at front of lower jaw not projecting horizontally forward but curved obliquely upward so as to nearly oppose those in upper jaw, the pair of incisors at middle of lower jaw nearly same size as adjoining ones; outer surface of pectoral fin base with a dis-

tinctly fleshy pad, posterior margin free and joined opposite attachment of gill membranes (*Gobiesox* Lacepède).

21*a*. Disk much greater than distance from tip of chin to front of disk.

22*a*. Origin of dorsal fin equidistant between midcaudal fin base and rear one-third of pectoral fin rays or a little behind them; anal origin under fifth dorsal fin ray, behind middle of base of rays of that fin; teeth of lower jaw not projecting forward in a nearly horizontal position but directed nearly straight upward in adults, a little more oblique in young specimens; head 2.2 to 2.7, disk 2.6 to 3.3, and depth 4 to 5.5, all in standard length; dorsal rays 8 or 9, anal 5 to 7, pectoral 18 to 21; anus equidistant between anal origin and rear margin of disk or a little nearer to anal origin; eye 1⅓ (young) to 5 (adults) times in interorbital space.

23*a*. Length of disk when measured from its rear margin reaches nearly to end of anal fin usually from midbase to base of last anal ray; small dark spot often present near front of base of dorsal fin (Costa Rica, West Indies, to Brazil). **Gobiesox cephalus** Lacepède

23*b*. Length of disk when measured from its rear margin reaches only to base of first or second anal fin ray; front of dorsal with a large dark blotch not at base of fin (Cocos Island). **Gobiesox fulvus** Meek

22*b*. Dorsal origin equidistant between midcaudal fin base and upper base of pectoral fin or rear of head; dorsal rays 10 or 11, anal 8, pectoral 19 to 21; gill membrane attached opposite fourth to seventh upper pectoral fin rays; interorbital 3⅓ to 4½ in head; distance from base of last dorsal ray to midcaudal base 2⅘ to 3¼ times in distance from dorsal origin to rear of head; anus equidistant between or closer to anal origin than rear margin of disk; fleshy pad on pectoral fin base with posterior margin free all way up to attachment of gill membrane; anal origin under fifth dorsal ray; depth of caudal peduncle equals its length.

24*a*. Eye 1½ to 2 in interorbital space (Texas; British Honduras; Bahamas and West Indies). **Gobiesox punctulatus** (Poey)

24*b*. Eye 0.9 to 1.1 in interorbital space (Pacific-Mazatlán). **Gobiesox adustus** Jordan and Gilbert

21*b*. Disk about equal to distance from tip of chin to front of disk; pelvic fins attached about one-third way out pectoral fin rays; length of disk equal to distance from rear margin of disk to anus or 1½ times from disk to anal origin; head 2.9, disk 3.8 to 4.2, depth 5 or 6, width of head 3½, all in standard length; eye 1½ to 2 in interorbital space; interorbital 3⅓ and disk 1⅔ in head; dorsal origin equidistant from midcaudal fin base and middle of length of pectoral fin; distance from last dorsal ray to midcaudal fin base 4 times in distance from rear of head to dorsal origin; anus closer to anal origin than rear margin of disk; least depth of caudal peduncle greater than length of caudal peduncle from base of last anal ray to midcaudal fin base; opercular spine not well developed; anal origin under base of about the sixth dorsal ray; dorsal rays 11 or 12; anal 7 or 8; pectoral 18 to 20 (Gulf of California). **Gobiesox funebris** Gilbert

TABLE 1.—*Counts made on species of American Gobiesocidae*

Species	Dorsal fin rays														Anal fin rays										Pectoral fin rays above attachment of gill membranes							Pectoral fin rays											
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	5	6	7	8	9	10	11	12	13	14	0	1	2	3	4	5	6	7	16	17	18	19	20	21	22	23	24	25	26	27
Acyrtus rubiginosus	2															2												1	4	1								4	2					
Rimicola eigenmanni	5	1														1	3	2										6	2	1			3	7										
Infratridens rhessodon						6	7	3												13	3							5	10	3					2	11	8	1						
Arbaciosa humeralis				1	6	1											1	4	3						10											4	4							
eos		2	5	1													2	7							8														1	9	1				
p. pyrrhocincla			1	12	1													12							15													5	2					
pyrrhocincla truncata		1	4														3	2							6												1	5						
rhodospila	3	7	8													4	14								18											8	9	1						
fasciata	1	5	13	5												1	13	9	1						19										1	5	13	6	3					
Sicyases sanguineus					1	6												5	1						14															5	9		
hildebrandi						1													1						2																2		
Cotylis papillifer									1											1										1	1							11					
microspilus									3											3											3	3								1	1	2	1
nigripinnis nigripinnis					2	12	5											2	14	4										2	17	5						8	8	5	6	1	
nigripinnis woodsi					1													1													2							2					
pinniger												2	3	5						7									4								2	1	3				
Sicyogaster maeandricus								1	8	9	1											5	10	3		16										1	1	5	15	2				
marmoratus							4	3												3	2					6												1	5	4				
Arcos poecilophthalmus		1	5	1													3	4								8													3	4	4			
macrophthalmus			3	4													4	3								8													2	6	3			
Gobiesox cephalus			6	30											2	13	13											4	4						1	2	36	32							
fulvus				1	1												1	1										2	2									2	2					
punctulatus					5	3												8											3	4	2					2	8	5						
adustus					3													3												5	1							6						
funebris						3	1										2	2												2	2				2	4	1							

ACYRTUS, new genus

Genotype.—*Sicyases rubiginosus* Poey.

This new genus is characterized by the lack of a dorsal curve of the premaxillary groove along upper lip over the snout tip in conjunction with the incisorlike teeth of the lower jaw having four minute joints. It may be distinguished from all other genera of American Gobiesocidae by the key on page 49. Other characters are those of the genotype.

Named *Acyrtus* in reference to the absence of the dorsal curve of the premaxillary groove over front of snout so common in all other American clingfishes except *Rimicola*, to which this new genus is most closely related.

ACYRTUS RUBIGINOSUS (Poey)

Sicyases rubiginosus Poey, Synopsis piscium Cubensium, p. 391, 1868 (Palmasola, Cuba); Enumeratio piscium Cubensium, p. 124, 1876 (Cuba).—Jordan, Evermann, and Clark, Rep. U. S. Comm.. Fish. for 1928, pt. 2, p. 490, 1930 (Matanzas, Cuba).

Sicyases carneus Poey, Synopsis piscium Cubensium, p. 392, 1868 (Palmasola, Cuba); Enumeratio piscium Cubensium, p. 124, 1876 (Cuba).—Jordan, Evermann, and Clark, Rep U. S. Comm. Fish. for 1928, pt. 2, p. 490, 1930 (Matanzas, Cuba).

Sicyases carneus Poey=*S. rubiginosus* Poey, Longley, Carnegie Inst. Washington Year Book, No. 33, p. 271, 1934.

?*Arbaciosa* sp. Beebe and Tee-Van, Zoologica, vol. 10, No. 1, p. 252, 1928 (Lamentin Reef, Port-au-Prince Bay, Haiti).

Gobiesox rubiginosus Jordan and Evermann, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 492, 1896 (Matanzas, Cuba); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2337, 1898 (Cuba).

Gobiesox carneus Jordan and Evermann, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 492, 1896 (Matanzas, Cuba); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2337, 1898 (Matanzas).

Gobiesox (*Rimicola*) *beryllinus* Hildebrand and Ginsburg, Bull. U. S. Bur. Fish., vol. 42, p. 213, fig. 5, 1927 (Key West, Boca Chica, Fla.).

Rimicola beryllinus Jordan, Evermann, and Clark, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 490, 1930 (Key West).

Remarks.—An examination of the type of *beryllinus* indicates that the incisorlike teeth at the front of the lower jaw have four minute points, although the middle ones are worn down a little. The teeth along with other characters in the description of *beryllinus* are in need of rechecking, but the type appears to have been dried out sometime and is not in first-class condition. Hildebrand and Ginsburg's drawing, "figure 5," has the lower rays of the pectoral fin twice too long and the disk is not quite long enough. The fin rays were not correctly counted in the original description.

Material examined.—Cuba: U.S.N.M. Nos. 82581 and 82582, totaling 12 specimens. Florida: U.S.N.M. Nos. 87533 (holotype of *beryllinus*) and 116936, one specimen.

Range.—Florida Keys and West Indies.

Genus RIMICOLA Jordan and Evermann

Rimicola JORDAN and EVERMANN, *in* Jordan, Proc. California Acad. Sci., vol. 6, p. 231, 1896. (Genotype: *Gobiesox muscarum* Meek and Pierson [=*Gobiesox eigenmanni* Gilbert].)

RIMICOLA EIGENMANNI (Gilbert)

Gobiesox eigenmanni GILBERT, Proc. U. S. Nat. Mus., vol. 13, p. 96, 1890 (Point Loma, near San Diego, Calif.).

Gobiesox rhessodon ROSA SMITH, Proc. U. S. Nat. Mus., vol. 7, p. 553, 1885 (San Cristóbal, Baja California).

Rimicola eigenmanni JORDAN, Proc. California Acad. Sci., vol. 6, p. 231, pl. 32, 1896.—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 492, 1896 (Point Loma); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2339, 1898 (Point Loma, San Cristóbal Bay).—SNYDER, Proc. U. S. Nat. Mus., vol. 35, p. 183, 1908 (Todos Santos Bay, Baja California, northward to Pacific Grove, Calif.).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 490, 1930 (Point Loma to Monterey).—WILBY, Copeia, 1936, No. 2, p. 116 (Round Island Flats, Clayoquot Sound, British Columbia).

Rimicola muscarum JORDAN, Proc. California Acad. Sci., vol. 6, p. 231, 1896.—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 492, 1896 (Monterey Bay); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2338, 1898 (Monterey Bay).

Gobiesox muscarum MEEK and PIERSON, Proc. California Acad. Sci., vol. 5, p. 571, pl. 71, 1895 (Monterey Bay, Calif.).

Remarks.—My counts appear to disagree with those made by Snyder, Wilby, and other authors because I have included all the rudimentary fin rays at the beginning of each fin, apparently not counted previously. To be certain of my fin ray counts, the skin was dissected away from one side of each fin at the base of the anterior fin rays. This revealed usually one or sometimes two rudimentary fin rays, and thus the counts by Snyder and by Wilby should be increased by one or two to bring them into line with my counts.

Material examined.—BRITISH COLUMBIA (Vancouver Island): U.S.N.M. No. 53850. CALIFORNIA: U.S.N.M. Nos. 44372 (holotype of *eigenmanni*), 48875 (cotype of *muscarum*), 49570, and 61055; U.M.M.Z. Nos. 64260, 64261, 64262, 63648, 63646, 63647, totaling 17 specimens.

Range.—Todos Santos Bay, Baja California, to Monterey Bay, and west coast of Vancouver Island.

INFRATRIDENS, new genus

Genotype.—*Gobiesox rhessodon* Rosa Smith.

This new genus may be recognized from all other genera of Gobiesocidae by the characters described in the key on pages 49–50. It is distinguished by its trifid incisorlike teeth at front of lower jaw, the smooth-tipped teeth in upper jaw, and the convex premaxillary groove across front of snout. Other characters are those of the genotype.

Named *Infratridens* in reference to the trifid teeth at front of lower jaw.

INFRATRIDENS RHESSODON (Rosa Smith)

Gobiesox rhessodon Rosa Smith, *in* Jordan and Gilbert, Proc. U. S. Nat. Mus., vol. 4, p. 63, 1881 (Point Loma) (*nomen nudum*).—Rosa Smith, Proc. U. S. Nat. Mus., vol. 4, p. 140, 1881 (San Diego, Calif.).

Arbaciosa rhessodon Jordan, Proc. California Acad. Sci., vol. 6, p. 230, pl. 36, 1896.—Jordan and Evermann, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 492, 1896 (San Diego; Gulf of California); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2340, 1898 (San Diego; Gulf of California).—Jordan, Evermann, and Clark, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 490, 1930 (San Diego; Gulf of California).

Material examined.—California: U.S.N.M. Nos. 5246, 28396 (3 types of *rhessodon*), 34765, 41975, 49574, 67312, 104193, 117642, totaling 24 specimens; U.M.M.Z. Nos. 63650, 63653, 63651, 63649, 63652, totaling 69 specimens. Catalina Island: U.S.N.M. No. 121964 and U.M.M.Z. No. 64263, totaling 8 specimens. Baja California: U.S.N.M. Nos. 36948 and 79149, totaling 2 specimens.

Range.—Southern California to Baja California.

Genus ARBACIOSA Jordan and Evermann

Arbaciosa Jordan and Evermann, *in* Jordan, Proc. California Acad. Sci., vol. 6, p. 230, 1896. (Genotype: *Gobiesox humeralis* Gilbert.)

ARBACIOSA HUMERALIS (Gilbert)

Gobiesox humeralis Gilbert, Proc. U. S. Nat. Mus., vol. 13, p. 95, 1890 (Puerto Refugio, Ángel Island).—Pellegrin, Bull. Mus. Hist. Nat. Paris, vol. 7, p. 162, 1901 (Gulf of California).

Arbaciosa humeralis Jordan, Proc. California Acad. Sci., vol. 6, p. 230, pl. 35, 1896.—Jordan and Evermann, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 491, 1896 (Gulf of California); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2341, 1898 (Ángel Island; La Paz).—Jordan, Evermann, and Clark, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 490, 1930 (Gulf of California).

Material examined.—Gulf of California: U.S.N.M. Nos. 44374 (cotype of *humeralis*), 125008 (cotype of *humeralis*), 46693, 48259 (4 cotypes of *humeralis*), totaling 8 specimens; F.M.N.H. No. 3336, 44 specimens; U.M.M.Z. No. 136128, 1 specimen.

Range.—Gulf of California.

ARBACIOSA EOS (Jordan and Gilbert)

Gobiesox eos Jordan and Gilbert, Proc. U. S. Nat. Mus., vol. 4, p. 360, 1882 (Mazatlán).

Arbaciosa eos Jordan, Proc. California Acad. Sci., vol. 6, p. 230, pl. 37, 1896 (Mazatlán).—Jordan and Evermann, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 491, 1896 (Pacific coast of Mexico); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2343, 1898 (Mazatlán).—Jordan, Evermann, and Clark, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 491, 1930 (Pacific coast of Mexico).

Material examined.—Mexico (Mazatlán): U.S.N.M. No. 30889 (18 cotypes of *Gobiesox eos*), C. H. Gilbert.

Range.—Mazatlán, Mexico.

ARBACIOSA PYRRHOCINCLA PYRRHOCINCLA (Cope)

Sicyases pyrrhocinclus COPE, Proc. Amer. Philos. Soc., vol. 17, p. 43, 1877 (Peru).

Arbaciosa pyrrhocinclus ABBOTT, Proc. Acad. Nat. Sci. Philadelphia, 1899, p. 363 (Peru, Pecasmayu Bay ?).—EVERMANN and RADCLIFFE, U. S. Nat. Mus. Bull. 95, p. 155, 1917.

Arbaciosa hieroglyphica EVERMANN and RADCLIFFE, U. S. Nat. Mus. Bull. 95, p. 155, pl. 14, fig. 2, 1917 (Lobos de Afuera, Peru).

? *Arbaciosa petersii* (*non* Garman) ABBOTT, Proc. Acad. Nat. Sci. Philadelphia, 1899, p. 363 (Peru) [not based on any specimen].

? *Gobiesox zebra* (*non* Jordan and Gilbert) REGAN, Ann. Mag. Nat. Hist., ser. 8, vol. 12, p. 280, 1933 (Lobos de Tierra, Peru).

Material examined.—PERU (Lobos de Afuera Islands): U.S.N.M. Nos. 77561 (type of *hieroglyphica*), 77565 (10 cotypes of *hieroglyphica*), 101703, 101704, 101705, 128175, totaling 21 specimens. Also from PERU: U.S.N.M. Nos. 88817, 88827, 88828, 119753, 128174, totaling 19 specimens.

Range.—Peru.

ARBACIOSA PYRRHOCINCLA TRUNCATA Heller and Snodgrass

Arbaciosa truncata HELLER and SNODGRASS, Proc. Washington Acad. Sci., vol. 5, p. 216, pl. 14, 1903 (Tagus Cove, Albemarle Island, Galápagos).—KENDALL and RADCLIFFE, Mem. Mus. Comp. Zool., vol. 35, No. 3, p. 160, 1912 (Chatham Island).—HERRE, Publ. Field Mus. Nat. Hist., zool. ser., vol. 21, p. 391, 1936 (South Seymour Island; Eden Island).

Gobiesox zebra (*non* Jordan and Gilbert) GILBERT, Proc. U. S. Nat. Mus., vol. 13, p. 452, 1890 (Duncan Island, Galápagos).

Material examined.—GALÁPAGOS ISLANDS: U.S.N.M. Nos. 65427, 101702, 101710, 101715, 101716, 101718, 109419, 116202, 119337, totaling 36 specimens; F.M.N.H. Nos. 25165–25215, 41301–41303, 41214, 41215, 41641–41646, totaling 62 specimens.

Range.—Galápagos Islands.

ARBACIOSA RHODOSPILA (Günther)

Gobiesox rhodospilus GÜNTHER, Proc. Zool. Soc. London, vol. 6, p. 25, 1864 (Panama); Trans. Zool. Soc. London, vol. 6, pp. 390, 445, 1869 (Panama).— JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 492, 1896 (Panama); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2335, 1898 (Panama).— BOULENGER, Bol. Mus. Zool. Anat. Comp. Univ, Torino, vol. 14, No. 335, p. 8, 1899 (Santa Elena Bay, Ecuador).—GILBERT and STARKS, Mem. California Acad. Sci., vol. 4, p. 189, 1904 (Panama).—MEEK and HILDEBRAND, The marine fishes of Panama, pt. 3, p. 926, 1928 (Panama and Santa Elena Bay).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 489, 1930 (Panama).

Sicyases petersii GARMAN, Proc. Boston Soc. Nat. Hist., vol. 18, p. 203, 1875 (San José, San Miguel, and Saboga, all Pearl Islands, Panama Bay).

Gobiesox zebra JORDAN and GILBERT, Proc. U. S. Nat. Mus., vol. 4, p. 359, 1882 (Mazatlán).

Arbaciosa zebra JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 403, 1896 (Mazatlán); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2341, 1898, (Mazatlán).—MEEK and HILDEBRAND, Marine fishes of Panama, pt. 3, p. 927, 1928 (Toboguilla Island).—KENDALL and RADCLIFFE, Mem. Mus. Comp. Zool., vol. 35, No. 3, p. 160, 1912 (Toboguilla Island).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 491, 1930 (Mazatlán.)

Material examined.—GULF OF CALIFORNIA: U.S.N.M. Nos. 29250 (47 cotypes of *zebra*), 47496, 119716, 119717, 119754, totaling 56 specimens. COSTA RICA: U.S.N.M. Nos. 92119 and 101711, totaling 3 specimens. PANAMA BAY: U.S.N.M. Nos. 65428 and 120435 (3 cotypes of *petersii*), totaling 8 specimens. COLOMBIA: U.S.N.M. No. 101712, one specimen. ECUADOR: U.S.N.M. Nos. 88826 and 101717, totaling 3 specimens.

Range.—Gulf of California to Ecuador.

ARBACIOSA FASCIATA (Peters)

Sicyases fasciatus PETERS, Monatsb. Akad. Wiss. Berlin, 1859, p. 412, May 8, 1860 (Puerto Cabello [probably Venezuela]).—GÜNTHER, Catalogue of the fishes in the British Museum, vol. 3, p. 497, 1861 (Puerto Cabello); Trans. Zool. Soc. London, vol. 6, p. 390, 1869 (Puerto Cabello).—GUITEL, Arch. Zool. Exper., vol. 5, No. 5, pp. 645–652, 1906 (anatomy).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 490, 1930 (Puerto Cabello).

Gobiesox rupestris POEY, Memorias sobre la historia natural de la isla de Cuba, vol. 2, p. 283, pl. 18, fig. 6, July 1860.

Gobiesox fasciatus JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 492, 1896 (Puerto Cabello); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2338, 1898 (Puerto Cabello).

Arbaciosa rupestris JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 492, 1896 (Cuba); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2341, 1898 (Cuba).—BEEBE and TEE-VAN, Zoologica, vol. 10, No. 1, p. 252, fig., 1928 (Port-au-Prince Bay, Haiti).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 491, 1930 (Cuba).—PARR, Bull. Bingham Oceanogr. Coll., vol. 3, art. 4, p. 136, 1930 (Green Cay, Bahamas).

Sicyases rupestris POEY, Synopsis piscium Cubensium, p. 391, 1868 (Cuba); Enumeratio piscium Cubensium, pt. 2, p. 124, 1876 (Cuba).

Arbaciosa minuta MEEK and HILDEBRAND, The marine fishes of Panama, pt. 3, p. 928, pl. 92, 1928 (Colon, Panama).

Material examined.—ST. CROIX ISLAND: U.S.N.M. Nos. 15382 and 15431, totaling 13 specimens. BARBADOS: U.S.N.M. No. 86752, 1 specimen. CUBA: U.S.N.M. Nos. 37414, 37421, 82580, totaling 15 specimens. GUATEMALA: U.M.M.Z. Field No. H35–138a, 6 specimens. PANAMA: U.S.N.M. No. 81523 (type of *minuta*). BRAZIL: U.S.N.M. Nos. 87799, 87800–87803, 88042, totaling 19 specimens.

Range.—West Indies; Guatemala to Brazil.

Genus SICYASES Müller and Troschel

Sicyases MÜLLER and TROSCHEL, *in* Müller, Arch. für Naturg. (Wiegmann), 9th year, vol. 1, pp. 297, 298, 1843 (genotype: *Sicyases sanguineus* Müller and Troschel); Ber. Verh. preuss. Akad. Wiss., 1843, p. 212 (genotype: *Sicyases sanguineus* Müller and Troschel) (ref. copied); Horae ichthyologicae. Beschreibung und abbildung neuer Fische, pt. 3, p. 19, 1849.

Tomicodon BRISOUT DE BARNEVILLE, Rev. Zool. Soc. Cuv., vol. 9, p. 144, 1846 (*Tomicodon chilensis* Brisout de Barneville); Echo Monde Savant, vol. 13, p. 535, 1846.

SICYASES SANGUINEUS Müller and Troschel

Sicyases sanguineus MÜLLER and TROSCHEL, *in* Müller, Arch. für Naturg. (Wiegmann), 9th year, vol. 1, p. 298, 1843 (Chile); Horae ichthyologicae, pt. 3, p. 19, pl. 3, fig. 1, 1849 (Chile).—GÜNTHER, Catalogue of the fishes in the British Museum, vol. 3, p. 494, 1861 (Chile; Valparaiso).—DELFIN, Catálogo de los peces de Chile, Valparaiso, p. 90, 1901 (Bahía de Concepción; Cavancha; Isla de Juan Fernández; Tomé; Talcahuano).

Tomicodon chilensis BRISOUT DE BARNEVILLE, Rev. Zool. Soc. Cuv., vol. 9, p. 144, 1846 (Valparaiso).

? *Gobiesox brevirostris* GAY, Historia fisica y politica de Chile . . . Zoologia, vol. 2, p. 335, pl. 9, fig. 1, 1848 (ref. copied).

Gobiesox sanguineus ABBOTT, Proc. Acad. Nat. Sci. Philadelphia, 1899, p. 363, (coasts of Peru and Chile).—EVERMANN and RADCLIFFE, U. S. Nat. Mus. Bull. 95, p. 153, 1917 (Peru and Chile).

Sicyases chilensis GÜNTHER, Catalogue of the fishes in the British Museum, vol. 3, p. 497, 1861 (Valparaiso).—DELFIN, Catálogo de los peces de Chile, Valparaiso, p. 90, 1901 (Valparaiso).

Material examined.—PERU: U.S.N.M. Nos. 44130, 77512, 83029, 91557, totaling 11 specimens. CHILE (Valparaiso): U.S.N.M. No. 121950 and F.M.N.H. No. 32994, 1 specimen each number.

Range.—Peru and Chile.

SICYASES HILDEBRANDI, new species

Holotype.—U.S.N.M. No. 88818, the only known specimen, 69 mm. in standard length, collected by Dr. W. L. Schmitt at Cumberland Bay, Juan Fernández Island, off Chile, December 1926.

Description.—Certain measurements were made on the holotype, and these along with others made on three specimens of *S. sanguineus* are recorded in table 2.

The following counts were made on the holotype: Dorsal rays 11; anal rays 9; pectoral rays 25–25; free edge of pectoral pad ends opposite 11–11 pectoral rays counting down from the dorsal edge; gill membranes attached opposite upper edge of pectoral fin base.

Head about 3½, depth 6.9, disk 2.9, all in standard length; eye 1½ in interorbital space, the latter 2⅔ in head (to upper edge of gill opening); dorsal origin equidistant between midcaudal fin base and middle of postorbital length of head; anal origin under bases of second and third from last dorsal fin rays; tip of snout to tip of opercular spine equal to distance from upper edge of gill opening to dorsal origin; base of last dorsal ray to midcaudal fin base 1½ in upper edge gill opening to dorsal origin; base of dorsal fin 1⁷⁄₁₀ and base of anal fin 2.1, both in gill opening to dorsal origin; anus just behind the rear margin of the disk; free posterior margin of the

fleshy pad on lower pectoral base ending opposite the eleventh ray from dorsal edge of pectoral fin; the middle incisors of both jaws much wider than the adjoining pair and those on lower jaw longer, but the two middle pairs of upper jaw about the same length; the interorbital space slightly concave; both nostrils close in front of eye, the anterior one with a small fringed flap arising on its posterior edge.

TABLE 2.—*Measurements of the two species of* Sicyases, *in hundredths of the standard length*

Characters	*hildebrandi*	*sanguineus*			
	Holotype	U.S.N.M. Nos.			
		77512	77512	77512	83029
Standard length (in millimeters)	69	59	78.5	90	159
Length of head to upper edge of gill opening	28.3	32.2	33.8	35.3	37.1
Length of head to tip of opercular spine	33.3	35.6	37.6	38.3	44.3
Greatest depth of body	14.5	14.9	15.9	16.1	21.7
Greatest width of head	27.5	29.1	29.9	33.9	37.1
Least depth of caudal peduncle	7.82	8.30	7.77	8.33	7.86
Length of caudal peduncle	13.8	13.9	10.8	11.1	13.8
Length of snout	10.6	11.7	12.2	13.1	13.8
Diameter of eye	7.54	7.63	8.02	7.56	6.26
Width of bony interorbital	12.2	12.2	14.0	16.0	18.2
Postorbital length of head to upper edge of gill opening	14.9	16.4	16.7	17.2	20.4
Postorbital length of head to tip of opercular spine	19.1	20.2	21.9	23.3	28.0
Length of disk	35.6	36.4	38.8	40.6	45.9
Distance from base of last dorsal ray to midcaudal base	21.7	20.7	17.5	19.1	16 0
Disk to anus	3.91	3.90	4.20	3.67	0.94
Anus to anal origin	19.6	23.4	20.4	21.6	20.4
Snout tip to dorsal origin	59.4	62.7	66.2	68.4	69.2
Snout tip to anal origin	72.5	76.3	79.7	80.0	80.5
Snout tip to center of anus	52.6	53.2	58.1	57.2	59.2
Length of base of dorsal fin	19.5	17.0	15.5	14.7	17.9
Length of base of anal fin	14.2	11.4	9.30	10.0	9.12
Longest ray of dorsal fin	12.5	12.2	12.5	13.3	14.1
Longest ray of anal fin	11.7	11.2	11.5	11.7	----------
Longest ray of caudal fin	24.5	23.6	----------	23.5	22.0
Longest ray of pectoral fin	14.5	15.3	14.3	16.7	18.2
Tip of snout to disk	13.3	14.2	14.3	15.5	15.4
Origin of dorsal to upper edge of gill opening	36.0	37.3	37.6	38.6	37.7

Remarks.—The chief differences between this new species and *Sicyases sanguineus* are in the more anterior position of the dorsal fin and the length of the bases of the dorsal and anal fins. The following measurements indicate the amount of the above differences, first for the new species then for *sanguineus:* Distance from base of last dorsal ray to midcaudal fin base in upper edge of gill opening to dorsal origin 1.65 and 1.80–2.35; length of caudal peduncle in tip of snout to anal origin 5.26 and 5.50–7.36; base of dorsal fin in head 1.55 and 1.90–2.40; base of anal fin in head 2.14 and 2.83–4.06; base of dorsal fin in snout to

dorsal origin 3.04 and 3.70–4.67; base of anal fin in snout to anal origin 5.10 and 6.70–8.83; dorsal origin equidistant between midcaudal fin base and middle of postorbital length of head for *hildebrandi*, and upper edge of gill opening to middle of length of upper pectoral rays for *sanguineus*. In general, the new species appears to be a little slenderer than *sanguineus*. Presumably, when an adequate series of *hildebrandi* is collected from the Juan Fernández Islands and studied, this new species may be best treated as a subspecies of *sanguineus*.

Named *hildebrandi* for Dr. Samuel F. Hildebrand, senior ichthyologist, United States Fish and Wildlife Service, who while working up a monograph of the fishes of Peru noticed this new fish and suggested that I describe it. It is with great pleasure that I name this new species in his honor and in recognition of his numerous and valuable contributions in ichthyology.

Genus COTYLIS Müller and Troschel

Cotylis Müller and Troschel, *in* Müller, Arch. für Naturg. (Wiegmann), 9th year, vol. 1, p. 297, 1843 (genotype: *Cotylis nuda* Müller and Troschel=*Lepadogaster nudus* Bloch and Schneider=*Gobiesox gyrinus* Jordan and Evermann=*Gobiesox nigripinnis* Peters) (*Cyclopterus nudus* Linnaeus not identified); Horae ichthyologicae, pt. 3, p. 17, pl. 3, fig. 2, 1849 (genotype: *Cotylis nuda* Bloch and Schneider). [*Cotylis* (*non* Müller and Troschel) Günther, Catalogue of the fishes in the British Museum, vol. 3, p. 498, 1861, but restricted to *Cotylis fimbriata* Müller and Troschel, 1849, from Red Sea, and not described in 1843. *Cotylis* Günther has the substitute name *Cotylichthys* Jordan, Proc. Acad. Nat. Sci. Philadelphia, 1919, p. 341.]

Bryssetaeres Jordan and Evermann, *in* Jordan, Proc. California Acad. Sci., vol. 6, p. 230, 1896 (genotype: *Gobiesox pinniger* Gilbert); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2328, 1898 (genotype: *G. pinniger* Gilbert).

Caulistius Jordan and Evermann, Rep. U. S. Comm. Fish and Fish. for 1895, App. p. 491, 1896. (Genotype: *Gobiesox papillifer* Gilbert.)

Bryssophilus Jordan and Evermann, U. S. Nat. Mus. Bull. 47, pt. 3, pp. 2329, 2330, 1898. (Genotype: *Gobiesox papillifer* Gilbert.)

COTYLIS PAPILLIFER (Gilbert)

Gobiesox papillifer Gilbert, Proc. U. S. Nat. Mus., vol. 13, p. 96, 1890 (Magdalena Bay, Lower California).—Jordan and Evermann, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 491, 1896 (Magdalena Bay); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2330, 1898 (Magdalena Bay).

Caulistius papillifer Jordan, Evermann, and Clark, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 488, 1930 (Magdalena Bay).

Material examined.—Baja California (Magdalena Bay): U.S.N.M. No. 44376 (type of *papillifer*), collected by the *Albatross*.

Range.—Magdalena Bay, Baja California.

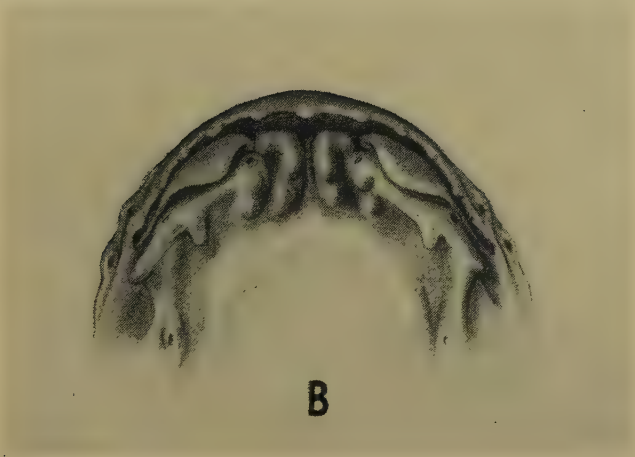
COTYLIS MICROSPILUS (Fowler)

PLATE 1, A

Caulistius microspilus FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1916, p. 412, fig. 4 (Panama Bay).

Description.—Head contained about 2⅔, disk 2.9 or 3, greatest depth of body 5 to 6, in standard length; eye 2½ in interorbital space; disk a little shorter than length of head; tip of chin to front of disk about ¾ to ⅘ length of disk; distance from base of last dorsal fin ray to midbase of caudal fin contained nearly three times in base of dorsal fin; dorsal origin nearly an eye diameter closer to midbase of caudal fin than to rear of orbit; depressed anal fin reaching a trifle past a line through caudal fin base, and depressed dorsal fin reaching to opposite caudal fin base; upper lip on premaxillary with a median papilla and five more on each side, but none posteriorly on upper lip; middle of snout with three short papillae or knobs, but edge of snout above groove without papillae anteriorly but about five well-developed ones laterally; another papilla behind rictus and one on lower lip below rictus; median part of chin and lower jaw with three rows of papillae, the most anterior being a pair of low lobes, next a pair of papillae, and the inner row consisting of two pairs of papillae, with the outer pair posterior to the anterior pair; lower lip at each side of median part of chin forming a small lobe bearing two small papillae; three large papillae along the inner edge of the groove along edge of lower lip on each side; preopercular spine well developed; three or four pairs of small incisorlike teeth at front of lower jaw in outer row; teeth at front of upper jaw nearly conical; lateral teeth of both jaws conical; a small patch of teeth behind outer teeth at front of both jaws; interorbital space flat; anterior nostril tubular with a short dermal flap, sometimes branched, arising at the posterior rim of this nostril; shoulder girdle with a fleshy lobe and a shallow groove along its lower edge separating it from the lower less fleshy lobe; base of pectoral fin with a fleshy lobe, the posterior and ventral margins free, this free margin beginning at point where gill membrane is fused opposite base of sixth or seventh pectoral ray from dorsal edge of that fin; upper edge of axial dermal flap behind pectoral fin is fused to base of fin opposite ninth or tenth ray from dorsal edge of pectoral fin; pelvic fin attached to near base of pectoral fin rays; lower rays of pectoral fin nearly as long as middle pectoral fin rays; margins of disk and pelvic pads of disk all covered with low flattened papillae; anus much closer to anal origin than to rear margin of disk.

Coloration.—In alcohol, pale brownish everywhere on dorsal surfaces of head and anterior parts of body profusely brown-spotted, these spots small and rather close together; tips of all rays of median



A, Lower side of head of *Cotylis microspilus* (Fowler), U. S. N. M. No. 107142. B, Lower side of head of *Cotylis nigripinnis nigripinnis* Peters, U. S. N. M. No. 58829. Drawn by Mrs. Aime M. Awl.

fins white; basally the dorsal, anal, and caudal fins are dark brown; more or less obscure pale bar across base of caudal fin.

Material examined.—The following three specimens, all collected by Dr. W. L. Schmitt, form the basis of the foregoing redescription of this species:

U.S.N.M. No. 88822, 26.5 mm., Salinas, Ecuador, September 15, 1926.
U.S.N.M. No. 88823, 58 mm., Guayaquil, Ecuador, 1926.
U.S.N.M. No. 107142, 62.6 mm., Paita, Peru, October 7, 1926.

The three young specimens listed below, also collected by Dr. Schmitt, are referred to this species with uncertainty. They appear to be more robust than the adults.

U.S.N.M. No. 101713, 2 specimens, 14.5 and 15 mm., Cupica Bay, Colombia, January 26, 1935.
U.S.N.M. No. 101938, 1 specimen, 9.5 mm., Cupica Bay, Colombia, January 26, 1935.

Range.—Panama Bay to northern Peru.

COTYLIS NIGRIPINNIS NIGRIPINNIS Peters

PLATE 1, B

Cotylis nigripinnis PETERS, Monatsb. Akad. Wiss. Berlin, 1859, p. 412, May 8, 1860 (Puerto Cabello [probably Venezuela]).

Gobiesox nigripinnis GÜNTHER, Catalogue of the fishes in the British Museum, vol. 3, p. 502, 1861 (Puerto Cabello); Trans. Zool. Soc. London, vol. 6, p. 390, 1869 (Puerto Cabello).—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 491, 1896 (Puerto Cabello); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2331, 1898 (Puerto Cabello).—METZELAAR, Bijd. Dierk. Feest. Num. 70th Geboortedag van Dr. Max Weber, pt. 22, p. 140, 1922 (Caracas Bay).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 488, 1930 (Puerto Cabello).

Gobiesox strumosus COPE, Proc. Acad. Nat. Sci. Philadelphia, vol. 22, p. 121, 1870 (Hilton Head, S. C.).—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 491, 1896 (Carolina to Florida); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2333, 1898 (Hilton Head, S. C.; Indian River, Fla.; Titusville).—HILDEBRAND and SCHROEDER, Bull. U. S. Bur. Fish., vol. 43, pt. 1, p. 339, 1928 (Chesapeake Bay).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 489, 1930 (Maryland to Florida).—LONGLEY and HILDEBRAND, Systematic catalogue of the fishes of Tortugas, Florida, p. 284, 1941 (Tortugas, Fla.).

Lepadogaster nudus (*non* Linnaeus) BLOCH and SCHNEIDER, Systema ichthyologiae, p. 2, 1801 (locality ?).

Cotylis nuda (*non* Linnaeus) MÜLLER and TROSCHEL, Horae ichthyologicae, pt. 3, p. 17, pl. 3, fig. 2, 1849 [West Indies].

Gobiesox nudus BRISOUT DE BARNEVILLE, Rev. Zool. Soc. Cuv., vol. 9, p. 144, 1846 (no locality).—GÜNTHER, Catalogue of the fishes in the British Museum, vol. 3, p. 502, 1861 (West Indies; Island of Cordova); Trans. Zool. Soc. London, vol. 6, p. 390, 1869 (Cardon).

Gobiesox gyrinus JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, p. 491, 1896 (*nomen nudum*); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2331, 1898 (West Indies) (based on *Gobiesox nudus* [*non* Linnaeus] Günther).—

JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 489, 1930 (West Indies).

Gobiesox virgatulus GOODE and BEAN, Proc. U. S. Nat. Mus., vol. 5, p. 236, 1882 (Gulf of Mexico) (*nomen nudum*).—JORDAN and GILBERT, Proc. U. S. Nat. Mus., vol. 5, p. 293, 1882 (Pensacola, Fla.).—JORDAN, Proc. U. S. Nat. Mus. vol. 7, p. 149, 1884 (Egmont).—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 491, 1896 (Pensacola Bay to Charleston, S. C.); U. S. Nat. Mus. Bull. 47, pt. 3 p. 2333, 1898 (Pensacola Bay north to Charleston).—SMITH, Fishes of North Carolina, p. 374, 1907 (Beaufort Harbor; Fort Macon; Charleston).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 489, 1930 (Pensacola Bay to Charleston).

Gobiesox sancti-martini METZELAAR, Report on the fishes collected by Dr. J. Boeke in the Dutch West Indies, 1904–1905, pt. 1, p. 151, fig. 48, 1919 (St. Martin, Simsonsbay Lagoon).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 490, 1930 (West Indies).

Gobiesox barbatulus STARKS, The fishes of the Stanford Expedition to Brazil, p. 73, pl. 14, 1913 (Natal).—RIBEIRO, Fauna Brasiliense . . . Peixes . . . Gobiesocidae, p. 2, 1915 (Lagôa em Natal).

"*Gobiesox yuma* Nichols=[non] *Gobiesox vittatus* Metzelaar=[non] *Gobiesox punctulatus* Poey," LONGLEY, Carnegie Inst. Washington Year Book No. 34, p. 284, 1935.

"*Gobiesox virgatulus* Jordan and Gilbert=*G. strumosus* Cope," LONGLEY, Carnegie Inst. Washington Year Book, No. 33, p. 270, 1934.

"*Gobiesox barbatulus* Starks=*Gobiesox gyrinus* Jordan and Evermann=*Gobiesox nigripinnis* Peters," LONGLEY, Carnegie Inst. Washington Year Book, No. 34, p. 284, 1935.

Gobiesox yuma NICHOLS, Bull. Amer. Mus. Nat. Hist., vol. 37, No. 37, p. 876, fig. 1, 1917 (Sanibel Light, Fla., west coast).—? BREDER, Bull. Bingham Oceanogr. Coll., vol. 1, art. 1, p. 85, 1927 (Royal Islands, Bahamas).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 490, 1930 (Florida).

Remarks.—Müller and Troschel's description of *Cotylis nuda* (1849, pp. 17–18) leaves little doubt that their species is the same as the one recognized here as *nigripinnis*, since small barbels are said to occur around the mouth and the coloration is brownish with streaks of dark spots. In addition, fin rays are given as dorsal 12, anal 7.

When the form along the Atlantic coast from Chesapeake Bay to the east coast of Florida is studied in the minutest detail, it may be recognized as distinct from *nigripinnis*, but I have not thoroughly investigated the variation in the various localities from Maryland to Brazil. There are several names available for the races or subspecies that may be recognized.

Dr. S. F. Hildebrand kindly turned over to me the notes made by Dr. W. H. Longley at Amsterdam on the type of *Gobiesox sancti-martini* Metzelaar. I quote:

T. L. [total length] 69 mm. D. 12, A, 8, P. 23–24 including a stub above. Diameter of eye (orbit) 3.0 mm. Interorbital width 7.0 mm. Nasal cirri expanded, bilobed, without fringe. Twenty-nine coarse cirri, becoming bulbous under pressure of the tissue behind them, along front of ventral disk in single

series. The fleshy border lateral to them only slightly crenulated before the anterior ray of the ventral fin. The lower angle of the pectoral moderately prominent, not exserted. Opercular cleft extending upward to the base of 6th ray, the fold before the base of the fin complete, continuous with the fleshy border of the operculum. Anterior teeth little if any flattened, the lateral in the upper jaw running in behind the front but not as regularly as in some. . .

TABLE 3.—*Counts and measurements made on species of* Cotylis, *expressed in hundredths of the standard length*

Characters	*microspilus*			*nigripinnis nigripinnis*		*nigripinnis woodsi*
	U.S.N.M. No. 88822	U.S.N.M. No. 88823	U.S.N.M. No. 107142	U.S.N.M. No. 87752	U.S.N.M. No. 87752	F.M.N.H. No. 41974
Standard length (in millimeters)	26.5	58	62.6	69	40	33
Length of head	41.5	41.2	41.0	40.6	42.0	41.2
Greatest depth of body	15.8	18.3	18.2	18.8	22.2	13.7
Greatest width of head	32.0	31.1	35.1	39.1	35.0	36.4
Length of caudal peduncle	8.30	9.32	8.79	10.1	11.5	7.58
Least depth of caudal peduncle	9.44	8.62	8.03	9.42	10.5	6.97
Length of snout	11.7	12.2	13.3	15.5	12.8	11.2
Diameter of eye	7.55	5.86	5.59	5.50	5.25	7.58
Width of interorbital space	10.9	14.7	13.6	13.0	12.7	9.40
Postorbital length of head	26.4	24.2	25.7	24.3	25.8	22.8
Length of disk	35.2	34.5	34.3	36.5	38.7	32.4
Distance from base last dorsal ray to midcaudal fin base	9.44	11.2	9.60	12.3	12.5	9.70
Gape or tip of snout to rictus	13.6	13.6	16.0	15.2	12.3	----------
Distance from rear margin of disk to anus	10.9	11.7	13.6	11.7	10.5	11.2
Anus (center) to anal origin	6.04	4.14	4.80	7.10	9.25	10.9
Snout tip to dorsal origin	61.1	59.2	60.0	64.5	65.0	69.1
Snout to anal origin	73.2	70.7	70.2	69.6	74.0	77.3
Snout to anus	64.9	66.9	65.5	62.3	65.0	63.7
Length of dorsal fin base (to base of last ray)	32.5	32.4	33.5	25.5	29.0	25.8
Length of anal fin base	21.1	22.1	21.6	21.7	20.0	16.7
Longest ray of dorsal fin	17.0	15.0	16.0	14.8	14.3	14.2
Longest ray of anal fin	15.1	12.4	12.8	12.0	13.0	11.5
Longest ray of caudal fin	30.6	26.7	26.4	24.3	26.3	26.4
Longest ray of pectoral fin	15.8	15.5	16.5	16.2	18.3	12.4
Length of third ray from bottom of pectoral fin	14.0	12.9	12.1	13.0	15.5	11.5
Number of pectoral fin rays	24–26	27–27	25–26	25–26	25–25	22–22
Dorsal rays	14	14	14	11	11	10
Anal rays	10	10	10	9	9	8
Number of upper pectoral rays above upper edge of attachment of gill membranes	6–7	7–7	6–6	6–6	6–7	6–6

See table 3 for measurements made on two specimens from Brazil.

I have examined the type of *Gobiesox yuma* Nichols and find that it possesses the barbellike structures around the mouth and in other respects resembles *Cotylis nigripinnis nigripinnis* to which I refer it

as a synonym. The teeth of the lower jaw at the front have uneven edges but are not bifid or trifid as in certain other genera. I count dorsal rays as 12, anal as 9, and pectoral 23.

The following two collections, referred to this species with uncertainty, contain very small specimens that do not show certain characters fully developed and may represent an undescribed species of small size:

U.S.N.M. No. 83862, 4 specimens, 10.5 to 11 mm., Trinidad, *Albatross*, January 30–February 21, 1884.

U.M.M.Z. No. 131173, 4 specimens, 8.3 to 9.5 mm., Velasco, Tex., Rice Institute, April 17, 1923.

Material examined.—MARYLAND and VIRGINIA: U.S.N.M. Nos. 30400, 30407, 43064, 58829, 67760, 67761, 68391, 74852, 76530, 76531, 77929, 83593, 85087, 85681, 86313, 88583, 88586, 89340, 91210–91239, 92024, 92031, 93759, 93805, 104930, 109846, 122392, 122394, totaling 420 specimens. NORTH CAROLINA: U.S.N.M. Nos. 4905, 85088, 122395, 122396, total 4 specimens. SOUTH CAROLINA: U.S.N.M. Nos. 26311, 59053, 59061, totaling 9 specimens. FLORIDA: U.S.N.M. Nos. 26611, 30471, 30861 (2 cotypes of *virgatulus*), 32760, 34719, 34725, 73250, 85089, 85090, 91456, 92213, 92215, 93716, 93882, 94896, 116933–116935, 125493, totaling 31 specimens. ALABAMA: U.S.N.M. No. 73545, 2 specimens. MISSISSIPPI: U. S. N. M. No. 32625, 1 specimen. LOUISIANA: U.S.N.M. Nos. 86134, 122393, 124979, totaling 3 specimens; U.M.M.Z. No. 128860, 3 specimens. TEXAS: U.S.N.M. Nos. 69347, 69348, 118542, totaling 4 specimens; U.M.M.Z. Nos. 111746 and 114471, totaling 15 specimens. BRAZIL: U.S.N.M. Nos. 87752 and 87798, totaling 3 specimens.

Range.—Chesapeake Bay to Brazil; West Indies.

COTYLIS NIGRIPINNIS WOODSI, new subspecies

Holotype.—F.M.N.H. No. 41974, a specimen 33 mm. in standard length, from Cocos Island at Wafer Bay, collected February 23, 1941.

Description of only known specimen.—Detailed measurements were made and these are recorded in hundredths of the standard length in table 3.

Head contained about 2½, disk 3, greatest depth of body about 7, in standard length; eye equal to bony interorbital space and 1⅔ in fleshy interorbital space; disk about 1.3 in head; tip of chin to front of disk about ⅗ length of disk; distance from base of last dorsal ray to midbase of caudal fin 2.7 in length of base of dorsal fin; dorsal origin equidistant between midbase of caudal fin and base of upper pectoral ray; tips of rays of depressed anal fin reaching a little past a line through base of caudal fin and depressed dorsal fin not reaching quite to that line; size and arrangement of papillae around mouth essentially as described for *nigripinnis;* about three pairs of incisorlike teeth at

front of lower jaw projecting obliquely forward, followed laterally by one or two somewhat enlarged conical teeth, then posteriorly by a short row of small conical teeth; inside of larger outer row of teeth a few smaller ones at front of lower jaw; upper jaw with conical teeth, those at front a little enlarged; none of the teeth with trifid tips; front of upper jaw inside of outer teeth with a few minute teeth; interorbital space flat; each anterior nostril with a bifid dermal flap on posterior margin; shoulder girdle with a fleshy lobe on its lower margin under gill cover; base of pectoral fin with a fleshy lobe, the posterior and ventral margins with a free edge that extends to the attachment of the opercular membrane, both of which are fused opposite the base of the sixth pectoral fin ray; upper edge of axial dermal flap behind pectoral fin fused to base of fin opposite the sixth pectoral ray; pelvic fins attached near base of about fourth pectoral fin ray; lower rays of pectoral fin nearly as long as middle rays; margins of disk and pelvic pads with low flattened papillae; anus a trifle closer to anal origin than to rear margin of disk.

Coloration.—General coloration pale brownish in alcohol, with five wide indistinct bars on body, the paler interspaces narrower than eye; sides of body with several very narrow pale lines; a dark elongate spot behind eye and a few narrow pale lines radiating posteriorly from orbit across gill cover; median fins black with tips of rays white.

Remarks.—This new subspecies is the representative of a similar form in the Atlantic from Maryland to Brazil herein recognized under the name *nigripinnis*. From that form *woodsi* may be distinguished by a larger eye and a less deep body, as indicated in the key.

Named *woodsi* in honor of Lt. Loren P. Woods, U. S. N. R., who tentatively suggested this specimen to be an undescribed species when he learned that I was studying the American clingfishes. Described with the permission of the authorities of the Chicago Natural History Museum.

COTYLIS PINNIGER (Gilbert)

Gobiesox pinniger Gilbert, Proc. U. S. Nat. Mus., vol. 13, p. 94, 1890 (Puerto Refugio, Ángel Island, San Luis Gonzales Bay, and La Paz, Gulf of California).—Pellegrin, Bull. Mus. Hist. Nat. Paris, vol. 7, p. 162, 1901 (Gulf of California).

Bryssetaeres pinniger Jordan and Evermann, Proc. California Acad. Sci., vol. 6, p. 230, pl. 34, 1896; Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 491, 1896 (Gulf of California); U. S. Nat. Mus. Bull. 47, p. 2328, 1898 (Gulf of California).—Jordan, Evermann, and Clark, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 488, 1930 (Gulf of California).—Breder, Bull. Bingham Oceanogr. Coll., vol. 2, art. 3, p. 48, 1936 (Puerto Refugio; Gonzago Bay).

Remarks.—The longer base of the dorsal fin is not considered of generic significance in view of other related species with dorsal fins of nearly the same length.

Material examined.—GULF OF CALIFORNIA: U.S.N.M. Nos. 44377 (type of *pinniger*), 46694 (4 cotypes of *pinniger*), 126808 (25 cotypes of *pinniger*), totaling 30 specimens; F.M.N.H. No. 3338, 19 specimens.

Range.—Gulf of California.

Genus SICYOGASTER Brisout de Barneville

Sicyogaster BRISOUT DE BARNEVILLE, Rev. Zool. Soc. Cuv., vol. 9, p. 144, 1846. (Genotype: *Gobiesox marmoratus* Jenyns.)

Caularchus GILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 14, p. 330, 1862. (Genotype: *Caularchus reticulatus*=*Lepadogaster reticulatus* Girard.)

SICYOGASTER MARMORATUS (Jenyns)

Gobiesox marmoratus JENYNS, The zoology of the voyage of H. M. S. *Beagle*, pt. 4, Fishes, p. 140, pl. 27, figs. 1, 1a, 1b, 1842.—GÜNTHER, Catalogue of the fishes in the British Museum, vol. 3, p. 504, 1861 (Chile).—?ABBOTT, Proc. Acad. Nat. Sci. Philadelphia, 1899, p. 363 (Peru).—DELFIN, Rev. Chilena Hist. Nat., vol. 3–4, p. 91, 1901 (Algarrobo; Chañaral; Punta Arenas; Calbuco; Iquique; Isla de Juan Fernández).—TORTONESE, Bol. Mus. Zool. Anat. Comp. Univ. Torino, vol. 47, p. 206, 1939 (Valparaiso).

Sicyogaster marmoratus BRISOUT DE BARNEVILLE, Rev. Zool. Soc. Cuv., vol. 9, p. 144, 1846 (Chile).

Cotylis marmoratus MÜLLER and TROSCHEL, Horae ichthyologicae, pt. 3, p. 19, 1849 (Chile).

Remarks.—The following notes on the type of *Gobiesox marmoratus* in the British Museum from "Archipelago of Chiloe," made by Dr. W. H. Longley, were kindly turned over to me by Dr. S. F. Hildebrand:

Two specimens of T. L. [total length] 56 and 64 mm. considerably macerated, the smaller better preserved. D. 12; A. 10; the last anal ray missing, but its support still evident. The pectoral both sides with 23 rays including the rudimentary one above. In the larger fish D. 12, A. 11.

In the small fish again I found that the membranous structure at pectoral base is evident for only half the vertical height of the fin but that in the lower half, where it is present, it exists as a very evident, freely projecting lobe.

On very careful examination, I find that the opercular cleft extends dorsally about to the base of the upper pectoral ray.

Material examined.—PERU: U.S.N.M. No. 101706, 1 specimen. CHILES U.S.N.M. Nos. 77381, 88819–88821, 88824, totaling 6 specimens.

Range.—Peru and Chile.

SICYOGASTER MAEANDRICUS (Girard)

Lepadogaster reticulatus GIRARD, Proc. Acad. Nat. Sci. Philadelphia, 1854, p. 155 (San Luis Obispo, Calif.) (preoccupied).

Lepadogaster maeandricus GIRARD, Explorations and surveys for a railroad route from the Mississippi River to the Pacific Ocean, vol. 10, pt. 4, p. 130, 1858 (San Luis Obispo, S. Faralones, Calif.) (new name).

Gobiesox maeandricus GÜNTHER, Catalogue of the fishes in the British Museum, vol. 3, p. 505, 1861 (Monterey).

Caularchus reticulatus GILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 14, p. 330, 1862.

Gobiesox reticulatus JORDAN and JOUY, Proc. U. S. Nat. Mus., vol. 4, p. 5, 1881 (Monterey and Cape Flattery).—JORDAN and GILBERT, Proc. U. S. Nat. Mus., vol. 4, p. 63, 1881 (Monterey to Puget Sound).—ROSA SMITH, Proc. U. S. Nat. Mus., vol. 4, p. 140, 141, 1881 (San Diego).

Caularchus maeandricus JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 491, 1896 (Vancouver Island to Monterey); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2328, 1898 (Vancouver Island to Point Conception).—GUITEL, Arch. Zool. Expér., vol. 5, No. 5, pp. 625–639, 1906 (anatomy).—EVERMANN and GOLDSBOROUGH, Bull. U. S. Bur. Fish., vol. 26 p. 336, 1907 (Fort Rupert; Gabriola Island).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 488, 1930 (Vancouver Island to Monterey).—SCHULTZ, Keys to the fishes of Washington, Oregon and closely adjoining regions, ed. 1, p. 197, 1936 (British Columbia to Point Arguello, Calif.).—SCHULTZ and DELACEY, Journ. Pan-Pacific Res. Inst. (Mid-Pacific Mag.), July–September, 1936, p. 211, 213 (British Columbia to Point Arguello, Calif.) (see this reference for additional references).—WILBY, Copeia, 1936, p. 116 (British Columbia).

Material examined.—BRITISH COLUMBIA: U.S.N.M. Nos. 49083, 60548, 60549, 64022, 82153, 82154, 103563, 103564, 103566, 103567, 120446, 120447, 126811, totaling 64 specimens. WASHINGTON: U.S.N.M. Nos. 23405, 27329, 38334, 42049, 83208, 83964, 103565, totaling 32 specimens. OREGON: U.S.N.M. No. 91974, 1 specimen. CALIFORNIA: U.S.N.M. Nos. 516 (type of *reticulatus=maeandricus*), 101382, 101383, 101388, totaling 4 specimens.

Range.—Queen Charlotte Islands to San Diego, Calif.; Puget Sound.

ARCOS, new genus

Genotype.—Gobiesox erythrops Gilbert.

This genus is characterized by the groove along the anterior or upper margin of the premaxillary which arches in a convex manner over the tip of the snout; the orbits are larger than in any other genus of American clingfishes, their diameter much greater than the least width of the bony interorbital. In addition, the axial dermal flap behind the pectoral fin has its dorsal edge attached much above the midbase of pectoral; the incisorlike teeth at front of lower jaw have smooth tips, and these teeth project forward horizontally and do not oppose the teeth at front of upper jaw, which are nearly conical; there are no papillae around the mouth, although the usual lobelike ridges occur on lower jaw and chin; gill membranes are joined at upper edge of pectoral fin base or appear to be opposite base of first pectoral fin ray; the free posterior margin of fleshy pad on outer surface of pectoral base is confined to the lower half of that fin and not above the thirteenth ray from the top. Other characters are those of the genotype.

Names *Arcos* in reference to the arched groove on the tip of the snout.

ARCOS POECILOPHTHALMUS (Jenyns)

Gobiesox poecilophthalmus JENYNS, The zoology of the voyage of H. M. S. *Beagle*, pt. 4, Fishes, p. 141, pl. 27, fig. 2, 2a 2b, 1842 (Chatham Island).—GÜNTHER, Catalogue of the fishes in the British Museum, vol. 3, p. 503, 1861 (Chatham Island).—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 491, 1896 (Chatham Island); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2335, 1898 (Chatham Island).

Cotylis poecilophthalmus MÜLLER and TROSCHEL, Horae ichthyologicae, pt. 3, p. 19, 1849 (Galápagos).

Tomicodon poecilophthalmos BRISOUT DE BARNEVILLE, Rev. Zool. Soc. Cuv., vol. 9, p. 144, 1846.

Gobiesox erythrops JORDAN and GILBERT, Proc. U. S. Nat. Mus., vol. 4, p. 360, 1882 (Mazatlán).—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 491, 1896 (Mazatlán; Tres Marías Island); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2336, 1898 (Mazatlán).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 490, 1930 (Mazatlán; Tres Marías Island).

Gobiesox paradiseus HERRE, Publ. Field Mus. Nat. Hist., zool. ser., vol. 18, p. 432, 1935 (Eden Island; South Seymour Island); vol. 21, p. 393, fig. 36, 1936 (Eden Island; South Seymour Island).

Remarks.—This species is recognizable by its very large eyes and narrow interorbital space. It is a small species and usually red in color.

Dr. S. F. Hildebrand kindly turned over the following note by Dr. W. H. Longley on the type of *Gobiesox poecilophthalmus* from Chatham Island:

T. L. [total length] 45 mm. D. 8, A. 7, P. 21+rod [or 22 rays].

Material examined.—MAZATLÁN: U.S.N.M. No. 30885 (type of *erythrops*). PANAMA BAY (Secas Islands): U.S.N.M. No. 101708, 5 specimens. GALÁPAGOS ISLANDS: U.S.N.M. No. 65516, 1 specimen; F.M.N.H. Nos. 17404 and 17405 (type and paratype of *paradiseus*).

Range.—Mazatlán to Panama and Galápagos Islands.

ARCOS MACROPHTHALMUS (Günther)

Gobiesox macrophthalmus GÜNTHER, Catalogue of the fishes in the British Museum, vol. 3, p. 502, 1861 (habitat unknown) [probably West Indies].—JORDAN and EVERMANN, U. S. Nat. Mus. Bull. 47, pt. 3, p. 2335, 1898 (St. Thomas).—METZELAAR, Bijd. Dierk. Feest. Num. 70th Geboortedag van Dr. Max Weber, pt. 22, p. 140, 1922 (Caracas Bay).—BEEBE and TEE-VAN, Zoologica, vol. 10, No. 1, p. 251, fig., 1928 (Lamentin Reef, Port-au-Prince Bay, Haiti).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 489, 1930 (probably West Indies).

Gobiesox cerasinus COPE, Trans. Amer. Philos. Soc., vol. 14, p. 413, 1871 (St. Martins, West Indies).—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 492, 1896 (St. Martins); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2336, 1898 (St. Martins).—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, vol. 71, p. 143, 149, 1919 (St. Martins; Jamaica).—? METZELAAR, Bijd. Dierk. Feest. Num. 70th Geboortedag van Dr. Max Weber, pt. 22, p. 140, 1922 (Caracas Bay).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 489, 1930 (St. Martins, West Indies).

Gobiesox tudes EVERMANN and MARSH, Bull. U. S. Fish Comm., vol. 20, pt. 1, p. 305, 1900 (Culebra, Puerto Rico).

Sicyases yumurina RIVERO, Proc. Boston Soc. Nat. Hist., vol. 41, No. 4, p. 74, 1936 (Matanzas, reef at entrance of the Bay).

Gobiesox androsiensis ROSEN, Lunds Univ. Års-Skr., new ser. (Afd. Math. Nat.), vol. 7, No. 5, p. 65, 1911 (Mastic Point, Andros; Nassau, Bahamas).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 489, 1930 (Bahamas).

Gobiesox androsiensis Rosen=[not] *Gobiesox rubiginosus* (Poey), LONGLEY, Carnegie Inst. Washington, Year Book, No. 34, p. 284, 1935.

Gobiesox cephalus METZELAAR, Bijd. Dierk. Feest. Num. 70th Geboortedag van Dr. Max Weber, pt. 22, p. 139, 1922 (Caracas Bay) (see comment below).

Gobiesox macrophthalmus JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 492, 1896 (West Indies).

Remarks.—This species has the largest eyes of any American form in the Atlantic and is red in color when alive. The eyes are much wider than the narrow interorbital space.

Through the kindness of Dr. Thomas Barbour I have examined a paratype of *Sicyases yumurina* Rivero and refer it to this species. Some traces of the red color still remain on this specimen.

Dr. S. F. Hildebrand very kindly turned over to me the following notes by Dr. W. H. Longley made on the type of *Gobiesox macrophthalmus* Günther in the British Museum:

T. L. [total length] 54 mm. D. 8; A. 7. First ray in each fin very slightly filamentous. P. 22 and a short, vestigial upper 23rd. Same on both sides. The outline of the fin rounded. A strong subopercular spine with a deep groove on its ventral surface and reaching beyond the base of any of the pectoral rays. The membranous sac at the base of the pectoral extends upward only to the base of the eighth ray counting up from the ventral margin, but is a very evident structure. The opercular cleft is of the full width of the pectoral base and extends up to the level of the upper margin of the dwarf ray, which is quite a sizable stub one-third the length of the second.

Eye 5.0 mm.=snout; bony interorbital=3.0 mm.=preorbital width . . .

The dorsal origin midway between tip of caudal and posterior margin of the pupil.

Dr. Hildebrand also turned over to me the following notes made by Dr. Longley in the Berlin Museum, on the probable types of *Gobiesox androsiensis* collected by Rosen in the Bahamas:

Spec. 1. T. L. [total length] 26 mm. D. 7, A. 6, P. 24–24, the outer ray short. Two or three pairs of teeth above slightly flattened. Three pairs below more flattened, the anterior distinctly enlarged. The border of the lower incisors only slightly crenulated, more nearly truncate than on No. 3. The branchial cleft extending up to the base of the upper pectoral ray. No groove on the subopercular spine. The nasal cirrus is a flap half the diameter of the narial orifice in width. On one side it ends in two filaments . . .

Spec. 2. T. L. 25 mm. D. 8, A. 7. Gill apparatus as above . . .

Spec. 3. T. L. 22 mm. D. 9, A 7, P. 22–22. Gill apparatus as above . . . Anterior face of lower incisors slightly fluted, the free border of the teeth almost bicuspid.

Dr. Hildebrand furnished me the following notes made by Dr. Longley in the Museum at Amsterdam on specimens reported upon by Metzelaar (1922) from Curaçao (Caracas Bay):

Gobiesox macrophthalmus . . . much fringed nasal cirri, the wide opercular cleft, the incomplete fold behind it with isolated lower lobe.

T. L. [total length] 70 mm. D. 8, A. 7, P. 24–24 including stub.

Gobiesox cephalus . . . Is the same as last [*macrophthalmus*] . . . T. L. 20 mm. D. 8, A. 7, P. 23–23, stub included . . . The gill cleft extends entire width of base of pectoral fin. I get no fold at all along the fin base. The anterior teeth of the lower jaw are enlarged, the middle much flattened and larger than the next pair.

Material examined.—Bahama Islands: U.S.N.M. Nos. 38386 and 53220, totaling 2 specimens. Jamaica: U.S.N.M. No. 78142, 1 specimen. St. Thomas: U.S.N.M. Nos. 78157 and 78158, totaling 2 specimens. San Juan Island: U.S.N.M. No. 117423, 4 specimens. Virgin Islands: U.S.N.M. No. 117412, 3 specimens. Martinique: U.S.N.M. No. 117452, 2 specimens. Puerto Rico: U.S.N.M. No. 126181, 1 specimen.

Range.—Bahama Islands and West Indies.

Genus GOBIESOX Lacepède

Gobiesox Lacepède, Histoire naturelle des poissons, vol. 2, p. 595, fig., 1800. (Genotype: *Gobiesox cephalus* Lacepède.)

Megaphalus Rafinesque, Analyse de la nature, p. 86, 1815. (Genotype: *Gobiesox cephalus.*) (Substitute name for *Gobiesox.*)

GOBIESOX CEPHALUS Lacepède

Gobiesox cephalus Lacepède, Histoire naturelle des poissons, vol. 2, pp. 595, 596, fig., 1800 (fresh-water rivers of South America).—Brisout de Barneville, Rev. Zool. Soc. Cuv., vol. 9, p. 145, 1846 (Martinique).—Günther, Catalogue of the fishes in the British Museum, vol. 3, pp. 499, 566, 1861 (Caribbean Sea; St. Domingo; West Indies).—Jordan and Evermann, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 491, 1896 (West Indies); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2332, 1898 (Caribbean Sea).—Guitel, Arch. Zool. Expér., vol. 5, No. 5, pp. 640–645, 1906 (anatomy).—Blosser, Ann. Carnegie Mus., vol. 6, p. 300, 1909 (St. Croix).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol. 71, p. 143, 1919 (St. Martins, West Indies).—Jordan, Evermann, and Clark, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 489, 1930 (West Indies).—? Rivero, Proc. Boston Soc. Nat. Hist., vol. 41, No. 4, p. 73, 1936 (Habana).

Gobiesox tudes Richardson, Zoology of the voyage of H. M. S. *Sulphur*, Ichthyology, vol. 1, p. 103, pl. 46, figs. 1–3, 1844 (locality unknown).—Jordan and Evermann, U. S. Nat. Mus. Bull. 47, pt. 3, p. 2333, 1898 (West Indies).—Jordan, Evermann, and Clark, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 489, 1930 (probably West Indies).

Gobiesox tudes Richardson=*Gobiesox cephalus* Lacepède, Longley, Carnegie Inst. Washington Year Book, No. 34, p. 284, 1935.

Cotylis stannii Müller and Troschel, Horae ichthyologicae, pt. 3, p. 18, pl. 3, fig. 3, 1849 (Brazil).

Gobiesox costaricensis Meek, Publ. Field Mus. Nat. Hist., zool. ser., vol. 10, No. 7, p. 74, 1912 (Zent River, Atlantic drainage, Costa Rica).—Behre, Ann.

Carnegie Mus., vol. 18, p. 314, 1928 (tributary to Río Cricamola near Conquantu).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 489, 1930 (Costa Rica).

Gobiesox ramsdeni RIVERO, Proc. Boston Soc. Nat. Hist., vol. 41, No. 4, p. 73, 1936 (Río Toa, "El Palenque" Yateras, Guantánamo, in Oriente Province, Cuba).

Remarks.—Dr. S. F. Hildebrand kindly turned over to me the following note made by Dr. W. H. Longley in the Paris Museum of Natural History on a specimen, No. 5134, of *Gobiesox cephalus* Lacepède:

T. L. [total length] 95 mm., D. 8, A. 6, P. 21 and a stub on outer side. If any are Lacepède's specimens, this must be it, others are all too late.

Contrary to most references in the literature, Lacepède did not report *G. cephalus* from the "Caribbean Sea" but from fresh-water rivers of South America. Since Lacepède mentions fresh water once and rivers twice in his description as the habitat of this species, I assume he did not make a mistake in the locality where the species occurred.

I have before me a series of specimens of *Gobiesox* from fresh-water streams of northern South America and Central America on the Atlantic side, and these agree in most characteristics throughout the area represented. Noteworthy is the arrangement of the teeth. On the lower jaw anteriorly the teeth of the outer row are somewhat enlarged, short, narrow and incisorlike, not crowded or projecting forward at the symphysis; front of upper jaw with conical teeth; lateral teeth in both jaws conical; sometimes with one or two enlarged caninelike teeth at front sides of lower or upper jaws; upper jaw with an inner patch of small conical teeth; origin of dorsal fin usually equidistant between midbase of caudal fin and tips of pectoral fin rays; anus usually equidistant between anal origin and rear margin of disk or a little closer to anal origin; anal origin behind middle of bases of dorsal fin rays or under the fifth or sixth; anus slightly in front of a vertical line through dorsal origin; head 2.2 to 2.6; disk 2.6 to 3.2; depth 4 to 5.5, all in standard length; interorbital equals snout.

There is a black blotch near base of dorsal fin on first rays that appears to occur constantly on the specimens examined.

William C. Schroeder, Museum of Comparative Zoology, kindly checked the type of *Gobiesox ramsdeni* (M. C. Z. No. 34152) and made the following observations:

Posterolateral teeth of lower jaw more caninelike and not smaller than front teeth; no papilla on upper or lower jaws (unless I overlooked this); length of disk equals disk to midbase of anal; anus closer to anal origin than to rear margin of disk by an eye's diameter. Standard length 107 [mm.]; head 43; length of disk 36; depth of body 25; D. 8; A. 5 or 6; P. 20; eye 5; interorbital 16.

The foregoing counts may be considered as correcting those given in the original description of *ramsdeni*.

Material examined.—West Indies: U.S.N.M. Nos. 26479, 29848, 93793, totaling 11 specimens. Costa Rica: U.S.N.M. No. 74246 (paratype of *costaricensis*); F. M. N. H. Nos. 7677 and 7813 (type and 2 paratypes of *costaricensis*), 7814, 7815, totaling 6 specimens. Venezuela (Macuto): U.S.N.M. Nos. 93815–93817, 93820–93822, 93827, totaling 16 specimens. Colombia (Río Dagua): U.S.N.M. No. 120217, 1 specimen.

Range.—West Indies; Costa Rica to Brazil.

GOBIESOX FULVUS Meek

Gobiesox fulvus Meek, Publ. Field Columbian Mus., zool. ser., vol. 7, No. 5, p. 149, 1907 (Cocos Island).

Remarks.—The following specimens were studied: Cocos Island: F. M. N. H. No. 6035 (type of *fulvus*); U.S.N.M. No. 91832, 1 specimen; U. M. M. Z. Nos. 131512 and 131513, 2 specimens.

Range.—Cocos Island.

GOBIESOX PUNCTULATUS (Poey)

Sicyases punctulatus Poey, Enumeratio piscium Cubensium, p. 124, 1876 (Cuba).—Jordan, Evermann, and Clark, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 490, 1930 (Cuba).

Gobiesox punctulatus Jordan and Evermann, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 492, 1896 (Cuba); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2338, 1898 (Cuba).—Metzelaar, Bijd. Dierk. Feest.-Num. 70th Geboortedag van Dr. Max Weber, pt. 22, p. 140, 1922 (Caracas Bay).

Gobiesox haeres Jordan and Bollman, Proc. U. S. Nat. Mus., vol. 11, p. 552, 1889 (Green Turtle Cay, Bahamas).—Jordan and Evermann, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 492, 1896 (Green Turtle Cay, Bahamas); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2337, 1898 (Green Turtle Cay, Bahamas).

Gobiesox nudus Metzelaar, Report on the fishes collected by Dr. J. Boeke in the Dutch West Indies 1904–1905, pt. 1, p. 151, 1919 (Curaçao and Bonaire).

Gobiesox l[h]aeres Jordan and Bollman=*G. punctulatus* (Poey), Longley, Carnegie Inst. Washington, Year Book, No. 33, p. 271, 1934.

Gobiesox vittatus Metzelaar, Bijd. Dierk. Feest.-Num. 70th Geboortedag van Dr. Max Weber, pt. 22, p. 140, fig. 3, 1922 (Caracas Bay).—Jordan, Evermann, and Clark, Rept. U. S. Comm. Fish. for 1928, pt. 2, p. 489, 1930 (Curaçao).

Sicyases haeres Jordan, Evermann, and Clark, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 490, 1930 (Green Turtle Cay, Bahamas).

Remarks.—This is a small species and may be recognized by its relatively short, thick and deep body giving it the appearance of robustness.

Dr. S. F. Hildebrand kindly turned over to me the notes made by Dr. W. H. Longley in the Museum at Amsterdam on the type of *Gobiesox vittatus* Metzelaar, which follow:

T. L. [total length] 29.0 mm., D. 11, A. 7. P. 19–20, orbit 2.0 mm. Interorbital 2.0 mm., anterior margin of sucking disk crenulated, the units not stalked. The nasal cirrus small, expanded, doubly pointed. Opercular cleft extending up to

base of 5th pectoral ray, the fold behind it complete, with a distinct lobe below. The origin of the dorsal midway between tip of snout and of tip of caudal. The anterior teeth above simple, sharp-pointed, circular in cross-section, I think. Three pairs anterior teeth below flattened, not truncate, but leaf-shaped or even a little more spatulate.

Body pretty uniformly covered with dark chromatophores at an average distance from one another of twice their diameter . . .

Material examined.—BAHAMA ISLANDS: U.S.N.M. No. 41733 (type of *haeres*). CUBA: U.S.N.M. No. 37531, 5 specimens. TEXAS: U.S.N.M. No. 121962, 1 specimen. BRITISH HONDURAS: U.S.N.M. No. 91816, 1 specimen. LOCALITY UNKNOWN: U.S.N.M. No. 34442, 1 specimen.

Range.—Bahama Islands and West Indies; Texas and British Honduras.

GOBIESOX ADUSTUS Jordan and Gilbert

Gobiesox adustus JORDAN and GILBERT, Proc. U. S. Nat. Mus., vol. 4, p. 360, 1882 (Mazatlán); vol. 5, p. 627, 1883 (Central America).—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 491, 1896 (Mazatlán); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2334, 1898 (Mazatlán; Pacific coast of Mexico.—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 489, 1930 (Pacific coast of Mexico).

Material examined.—U.S.N.M. No. 29249 (3 types of *adustus*), Mazatlán, C. H. Gilbert.

Range.—Mazatlán, Mexico.

GOBIESOX FUNEBRIS Gilbert

Gobiesox funebris GILBERT, Proc. U. S. Nat. Mus., vol. 13, p. 95, 1890 (Puerto Refugio, Ángel Island, and La Paz, Gulf of California).—JORDAN and EVERMANN, Rep. U. S. Comm. Fish and Fish. for 1895, App., p. 491, 1896 (Gulf of California); U. S. Nat. Mus. Bull. 47, pt. 3, p. 2334, 1898 (Ángel Island and La Paz, Gulf of California).—JORDAN, EVERMANN, and CLARK, Rep. U. S. Comm. Fish. for 1928, pt. 2, p. 489, 1930 (Gulf of California).—BREDER, Bull. Bingham Oceanogr. Coll., vol. 2, art. 3, p. 48, 1936 (Puerto Refugio).

Remarks.—This species may be recognized by its small disk, the attachment of the gill membranes opposite the bases of the fifth or sixth pectoral fin rays, and the poor development of the fleshy pad on outer pectoral fin base, along with its narrower head.

Material examined.—GULF OF CALIFORNIA: U.S.N.M. Nos. 44378 (type of *funebris*), 119720, 124955 (2 cotypes of *funebris*), totaling 4 specimens; F.M.N.H. No. 8997, 2 specimens.

Range.—Gulf of California.

U. S. GOVERNMENT PRINTING OFFICE: 1944